

Remarks

Claims 1-10 are pending.

Claim 1 and 10 are amended.

Claim 4 is cancelled.

Claims 2-9 are original.

The application now contains claims 1-3 and 5-10

Claim 1 is amended for clarity by inserting a comma into line 5 between the terms "metal carbonates" and "ammonium carbonates" and by inserting at the end of line 6 "wherein all of the base needed for the oxidation is added and the water added is sufficient to dissolve the organic acid salt formed in by neutralization reactions between added organic acids and the bicarbonate or carbonate but less than an amount which would dissolve the bicarbonate or carbonate". Support is as follows: "wherein all of the base needed for the oxidation is added" - specification page 2 lines 24-25; "the water added is sufficient to dissolve the organic acid salt formed in by neutralization reactions between added organic acids and the bicarbonate or carbonate" - original claim 4; "but less than an amount which would dissolve the bicarbonate or carbonate" - one may argue that this, as well as the other amendments is inherent in language of the original claims, however, the inserted language is added to emphasize a significant feature of the invention, that the base is in solid form, e.g., as part of a slurry wherein obviously some small amount of base is dissolved - that this is significant part of the invention is inescapable in light of, e.g., the discussions on pages 2, 4 and 5 of the specification.

Claim 10 is amended for clarity by deleting the phrase "is a compound which" immediately after the word radical in line 1 and inserting in its stead the phrase "is within". Support is inherent in the claim.

No new matter is added.

Rejections

Claim 10 is rejected under 35 USC 112 second paragraph for using improper open language. Applicants respectfully point out that claim 10 is more narrow as it relates to the compounds involved than any other claim. However, Applicants believe that the instant language removes any doubt that the nitroxyl being formed is a structural featured encompassed by a larger molecule and in the case of claim 10, that structural feature has the formula X.

Applicants respectfully submit that the rejections of claim 10 under 35 USC 112 second paragraph are overcome and kindly ask that the rejections be withdrawn.

Claims 1-10 are rejected under 35 USC 103(a) as being anticipated by Gillet et. al., US 6,538,141, which discloses a process wherein a solution of a peracid and a separate solution of a base, for example an aqueous solution of an alkali metal carbonate or bicarbonate, are added simultaneously in portions. The dosing rates of peracid and base are regulated in such a way that the pH is maintained in the range of 4 to 12., column 3, lines 4-14 of '141. The Examiner states on page 6 that Gillet discloses the potential use of a solid base because some of the bases listed in Gillet are only slightly soluble in water.

Applicants respectfully traverse the rejections.

Before directly addressing the specific 103(a) rejections in the Action, Applicants respectfully wish to correct a statement at the bottom of page 6 of the Action. Applicants argument is not that a "high volume of water is produced in the prior art process". The point that Applicants wish to make is that the prior art process introduces a high volume of water because the prior art adds the base as a solution and that for less soluble bases, even more water will be needed, col. 3, lines 22-27 of Gillet. The amount of water needed to dissolve the selected weak base far exceeds the amount of water needed to dissolve the salt formed by the reaction of base with organic acid and the amount of water produced by this neutralization is negligible, instant Spec. page 5 line 7.

Regarding whether Gillet discloses the potential use of a solid base, Applicants respectfully point out that not only is the prior art silent regarding the use of a solid base, the process of the prior art excludes the use of a solid base for at least the following reasons. In the prior art process, the base is added as a solution in portions simultaneously with the addition of the peracid to maintain a particular pH profile during the course of the reaction. Significantly, Gillet is clear that the base is added as a solution, column 3, lines 22-27, " The weight concentration of the aqueous solutions of alkali metal or alkaline-earth metal carbonates or hydrogen carbonates is set by the solubility limit of these species in water" and even though "Efforts will be made to use solutions that are as concentrated as possible", only solutions are to be used.

To elaborate further on the issue of water volume, Applicants respectfully refer to page 4 and 5 of the instant specification and the instant examples. Applicants contend that one skilled in the art would know how to calculate the amount of water needed from well known tables available to any chemist, however, the discussion on page 4 and 5 not only makes clear that the instant process uses less water, but also demonstrates how to calculate the amount of water needed. Further, the instant process allows one to use some bases that can not be used in the method of Gillet because they have such low solubility in water that solutions with practical concentrations can not be prepared, for example CaCO_3 , MgCO_3 or Dolomite ($\text{CaCO}_3 \cdot \text{MgCO}_3$).

Applicants also respectfully point out that reducing the amount of water being introduced into the reaction is not the only significant improvement offered by the instant method. As described in the instant specification on page 1, paragraphs 4 and 5, the successful oxidation of an amine with a peracid requires that the pH of the reaction mixture be controlled. Therefore, the presence of the correct amount of base available to the reaction is an essential component to the successful and efficient conversion to nitroxyl. Any process must therefore comprise a way of controlling the pH.

In Gillet, a defined amount of base in solution is added along with the peracid. Care is taken to make sure that the correct amount of base is added.

Applicants have discovered that having the base present as a solid or slurry and not as part of a solution effectively controls the amount of base released to the reaction. This provides a significantly both a more effective and more easily controlled process for proper pH control which is not suggested by the art. Further benefits such as simpler reaction vessel design, less complicated processing steps and the higher volume enabled by eliminating much of the water required in the '141 process are additional advantages afforded the industry by the invention.

Therefore, the instant process provides more than one significant advantage over the art, perhaps the most unexpected advantage being a more practical, if not more effective way of controlling pH. Other practical advantages are discussed in the specification.

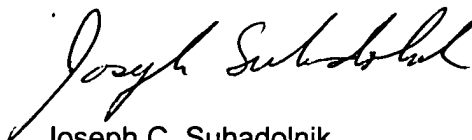
Applicants thus respectfully aver that Gillet is not only silent about the use of a solid base, in fact, Gillet explicitly teaches that a solution of base is used. Even though Gillet notes that concentrated solutions are desirable, there is nothing in Gillet to suggest that a solid base would be effective in the reaction.

Therefore Applicants respectfully aver that the instant invention provides processing steps and conditions that are not taught or suggested in the art and that significant and unexpected improvements are provided as described above.

Applicants respectfully submit that in light of the above discussion the rejections under 35 USC 103(c) over Gillet et. al., US 6,538,141 are overcome and kindly ask that they be withdrawn.

Applicants respectfully submit that all rejections are overcome and kindly ask that all rejections be withdrawn and claims 1-3 and 5-10 be found allowable. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,



Joseph C. Suhadolnik
Agent for Applicants
Reg. No. 56,880
filed under 37 CFR 1.34(a)

Ciba Specialty Chemicals Corporation
Patent Department
540 White Plains Road
P.O. Box 2005
Tarrytown, NY 10591-9005
Tel. (914) 785-2973
Fax (914) 785-7102